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E. Intelligence Collection Activities

(5) Scientific and Technical Intelligence

The Office of ELINT (OEL) through its Quality
ELINT Program made substantial contributions this past year
both to the National ELINT effort and to the Agency's develop-
ment of [REDACTED] Successful

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OEL collection operations included [REDACTED]

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NSA review(s) completed.

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NRO REVIEW
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PFIAB/NSC review completed.

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circuit technology. Information gained from a very thorough
study of [REDACTED]

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[REDACTED] forms a sound basis for estimates of Soviet abilities to
employ similar circuit technology in developing advanced types
of devices for military systems applications.

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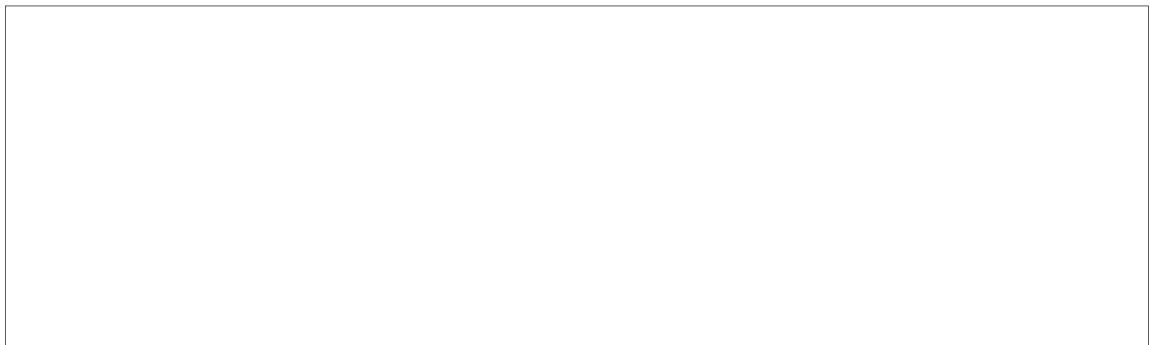
E. (6) Guided Missile and Astronautics Intelligence

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DD/S&T increased its effort this past year for a comprehensive analysis of the [REDACTED] in response to urgent requirements for support to armed forces operations in North Vietnam. The Directorate successfully launched air-borne collection operations thereby obtaining documentary evidence which provided [REDACTED]

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At the request of the DD/R&E, Department of Defense, DD/S&T provided two ABM studies contending that the Soviets are deploying a system at Moscow capable of long-range intercept of ballistic missiles and that a second system being deployed has capabilities of a long-range SAM, but may also have some limited ABM capability.

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E. (6) During this period, the Foreign Missile and Space Analysis Center (FMSAC) merged with the Ballistic Missile and Space Division of OSI, and FMSAC thereby assumed responsibility for complete analysis of foreign strategic weapons and space systems with the exception of those purely defensive in nature.

External contractors of FMSAC, [REDACTED]

[REDACTED] contributed significantly to its published report on the Soviet Solid Missile programs during FY1966. This report refuted a propaganda ploy by the Soviet Union which, at least on two occasions, publicly displayed an ICBM, alleged to be a solid propelled vehicle. FMSAC, incorporating the separate analyses of [REDACTED] together with other available data, concluded that a flight test program for a solid propelled weapon to ICBM range had never been conducted in the Soviet Union.

[REDACTED] has been able to

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FMSAC with contractor assistance completed a study of all operational Soviet ICBM re-entry vehicles which will be published in FY1967 and should make a valuable contribution to the Intelligence Community and related segments of the Scientific Community.

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E. (7) Atomic Energy Intelligence

(a) The Office of Scientific Intelligence (OSI) gave extensive coverage to the third Communist Chinese nuclear test that occurred in May 1966. In cooperation with the [REDACTED] through the mechanism of [REDACTED] this most recent Chinese test was studied. It was concluded that although the Chinese have taken the first step toward the development of a thermonuclear weapon, their attempt met with limited success and its immediate value was judged to be primarily for propaganda.

(b) Considerable success was achieved in analyzing French activities related to their preparations in the Pacific for nuclear testing and in predicting test times.

(c) As a result of a nuclear device model study program carried out by [REDACTED] [REDACTED], we have improved our understanding of Soviet nuclear weapon technology. These studies led OSI to conclude that there is an even chance that the Soviets have developed a warhead with an enhanced kill radius for use in [REDACTED]

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(d) After a detailed analysis of a seismic event which occurred near Ufa on 10 June 1965, we have concluded that the Soviets used a nuclear explosion to stimulate oil or gas production in a depleted well. Considering this event, together with other Soviet cratering shots and the 15 January 1965 river-damming event near Semipalatinsk, we have adduced that the Soviets have an active and extensive program for peaceful uses of nuclear explosives.

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F. Processing of Raw Intelligence

The Office of Computer Services (OCS) operates the CIA Computer Center around-the-clock. Automatic Data Processing (ADP) applications by OCS are categorized as (1) Scientific Computing, (2) Intelligence Information Processing, and (3) Management Data Processing.

Computer hardware/software systems developments during the period centered around inaugurating a transition to third generation systems. Initial IBM System 360 components were installed and a multi-tasking utility system was developed in-house and implemented.

F. (2) Information Handling and Retrieval Systems

The principal developments of FY1966 are summarized below:

A. Scientific

(1) Trajectory and Orbital Analysis - developed a program to provide a six degree of freedom guided missile simulation of the flight of a surface-to-air missile and a program for statistical analysis and plotting of radar optical signatures.

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(6) Cartography - completed the initial phase
of the construction and implementation of an automatic,
world-wide map projection and plotting system.

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B. Intelligence Information Processing

Developments over the past year resulted in an increase in size and scope of data bases and improvements in retrieval and analysis programs. The special purpose computer configuration (ALP) was installed as scheduled, and it performed rudimentary translation of Russian to English, and high-speed transcription from stenotype tapes. This system has been subjected to extensive testing in a production environment. It will be given a final evaluation before 1 October 1966 to determine future use.

Commencing August 1966, all subsequent NIS production will make use of the EPIC system which links the computer and photo composing equipment to produce page makeup automatically. This technique includes "Hyphenless Justification" which permits the setting up of a printed page without the use of hyphens. Other applications for EPIC are being investigated.

Although there are no significant results in end-product to report, considerable progress was made, nevertheless, in the development of programs for the following:

Collection Target Management; Soviet Test Range

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Activity, and Automatic Map Making.

The principal developmental program in support of intelligence information processing is Project CHIVE (a computer-driven document retrieval and information system), which entered Phase III (Detailed Design and Implementation) in October 1965. Significant developments in Phase III are as follows:

(1) Resolved a satisfactory all-source security systems concept.

(2) Inaugurated authority lists to support the indexing functions.

(3) Completed the basic design of the EDP file maintenance and retrieval subsystem (CAPRI).

(4) Initiated testing of an optical character reader input device.

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C. Management Information

(1) Agency Management Information System (MIS)

Preliminary analysis was made for the development of an integrated, on-line Management Information System that will provide the Director with the kinds of data he needs for making administrative decisions.

(2) Project SANCA converted to machine-readable language the security name check data base and the initial (tape-oriented) system was prepared for testing.

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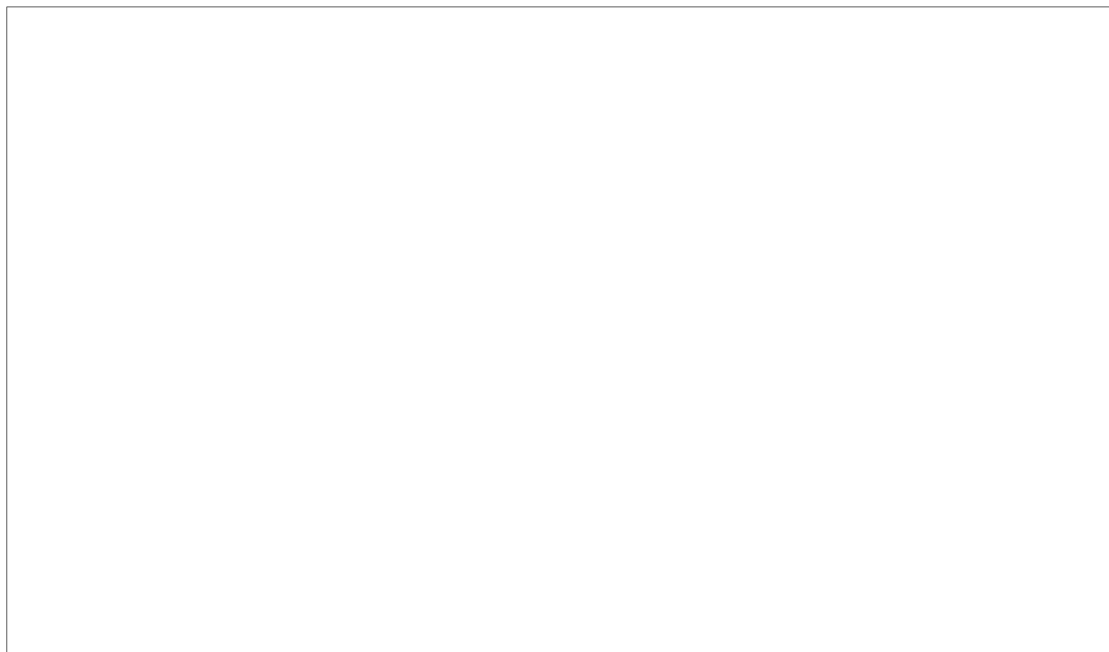
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G. Intelligence Production

(1) Current Intelligence Analyses

The Office of Scientific Intelligence continued to respond to increasing requirements for current intelligence reporting stressed in FY1965, primarily through the mechanism of the Scientific Intelligence Report. Four reports dealing with



The Surveyor, which made its appearance last year, continued to be a highly successful daily publication containing brief S&T items of immediate interest for internal Agency dissemination. In October, publication of two weekly versions of this periodical, with differing security classifications, was initiated, and the

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Weekly Surveyor now provides community-wide coverage of current S&T topics. The Office published a monthly Scientific Intelligence Digest in which timely and more detailed articles such as the role of the Tallinn-type missile complexes were included.

During FY1966, FMSAC published (253) Daily Missile and Space Summaries for Consumers in the U. S. []

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[] reporting on significant current developments in the foreign missile and space field.

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G. (2) National and Special Intelligence Estimates

The National Intelligence Estimates program and the National Intelligence Projections for Planning (NIPP) program together constitute the most significant outlet for our analysis of foreign scientific and technical advances and military research and development activities. Much of this effort consists of determining the performance characteristics of existing and estimated future weapons systems of foreign powers. During the past year, OSI and FMSAC contributed to the National Intelligence Estimates and National Intelligence Projections programs separately and/or through the appropriate USIB committees (SIC, JAEIC, and GMAIC). As in the past, it participated by written and oral contributions to some 15 major estimates, including the primary Soviet estimates on atomic energy, air and missile defense, strategic attack, and general purpose forces. Detailed performance characteristics tables and textual support were prepared for the corresponding areas of the NIPP. OSI made a substantial contribution to estimates on Chinese Communist advanced weapons development, nuclear proliferation, Soviet CW, the Threshold Test Ban Treaty, []

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[], and warning of Soviet intentions

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to attack. Contributions were also made to estimates on
India, Cuba, and the UAR.

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G. (3) National Intelligence Surveys

During FY1966, OSI participated in the NIS program completing twelve (12) Scientific Sections and seven (7) on Health and Sanitation covering such strategic areas as Indonesia, Cuba, Laos, and Cambodia. Most of the sections were based on external contracts but were coordinated and edited in OSI.

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I. Research and Development

The President's Foreign Intelligence Advisory Board has been briefed or otherwise furnished with reports on major R&D programs such as CORONA, [REDACTED] OXCART, IDEALIST, and ISINGLASS. Other significant R&D programs of the Directorate of Science and Technology include the following:

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evaluated this year. Two new polygraph measurements are to be tested in the live situation prior to establishing the final design. Completion of the program is still scheduled by FY'68.

(g) Analysis Techniques

Additional progress has been made in isolating the problems involved in answering the challenge of faster analysis of a greater mass of new intelligence data. The program is organized to direct attention toward the design, integration, and testing of the man-machine information analysis process. Provisions are being made for: The development of specialized procedures, equipment and techniques for intelligence processing; the testing of these procedures and techniques with live intelligence data; and the generation of experience and technical knowledge to assist in the design and planning of new operational systems.

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were delivered to the OXCART program. KEMPSTER - An electron gun which will be mounted on OXCART aircraft to generate an ion cloud in front of the aircraft to reduce the radar cross section has undergone final studies for feasibility and a development program has been defined. [REDACTED]

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[REDACTED] is now in production and units are being delivered to both the IDEALIST and OXCART Programs.

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Responsibility for the Agency's production of finished intelligence on foreign scientific and technical activities rests with the Office of Scientific Intelligence (OSI) and the Foreign Missile and Space Analysis Center (FMSAC), under the authority of NSCID 3, DCIL 3/3 for atomic energy, DCID 3/4 for guided missiles and astronautics, and DCID 3/5 for other scientific and technical intelligence.

The manner in which the Agency's scientific and technical resources are structured is shown in attachment (A). Participation of S&T components in the intelligence process is indicated in attachment (B) which demonstrates how the Directorate operates on a closed-loop principle in a continuing cycle. Intelligence requirements are examined and formulated into a program subjected to feasibility study and evaluation for cost-effectiveness. Once this critical review is made, the project proceeds to the Research and Development phases, ultimately being placed in the field for intelligence collection. Data collected is processed by appropriate S&T units after which the processed data is analyzed and published in finished form for distribution throughout the intelligence community.

The Director of Central Intelligence has available to him various advisory panels composed of leading U. S. scientists, 25X1

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industrialists, academic and military people who are charged with reviewing our evidence and intelligence on foreign strategic weapons systems, foreign space programs, and foreign nuclear energy programs. During the past year, on at least two occasions, the Strategic Weapons Intelligence Panel under [REDACTED] 25X1 [REDACTED] the Space Intelligence Panel under [REDACTED] 25X1 and the Nuclear Intelligence Panel chaired by [REDACTED] 25X1 met to consider the problems and new developments in their respective areas thereby contributing valuable insights and recommendations to the Intelligence Community.

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M. Significant Gaps and Deficiencies:

Recruitment of sufficient qualified scientists and experienced technical personnel continues as a problem in spite of a vigorous effort to overcome this deficiency.

Funding limitations likewise present a problem which, though not unique, has perhaps a greater effect on the Research and Development area than in other fields. It tends to impede an orderly follow-on development of specific equipment or system concepts.

An outstanding problem which faces the Quality ELINT Program is the necessary replacement of the RB-47 aircraft (when it goes out of USAF inventory this fall) to assure continuity of this program. It is necessary that a C-135 aircraft be acquired as soon as possible for proper continuity and the configuration of an improved capability adequate to perform the many specialized tasks required.

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